

Drought Monitoring: Mali

The challenge

Droughts are a major threat to agricultural livelihoods in Mali, undermining food security and economic stability. Accurate and timely drought monitoring is crucial for early warning and effective response. The National Directorate of Agriculture (*Direction Nationale de l'Agriculture*, DNA) has emphasized the need for a platform to monitor drought impacts, identify drought-affected areas and assess the effect on staple crops. Their main objective is to enhance national agricultural statistics and develop strategic recommendations to improve decision-making for drought management.

The solution

The Mali Drought Monitoring System (MaliDMS) addresses these needs by monitoring drought onset, occurrence, duration, extent and severity based on Water Productivity through Open access of Remotely sensed derived data (WaPOR) and other high-resolution remote sensing data that are generated in near real-time to enable a comprehensive assessment of drought conditions. The interactive interface shows spatiotemporal drought dynamics through maps and graphs, integrating the latest satellite observations of precipitation, vegetation indices and soil moisture (Figure 1).

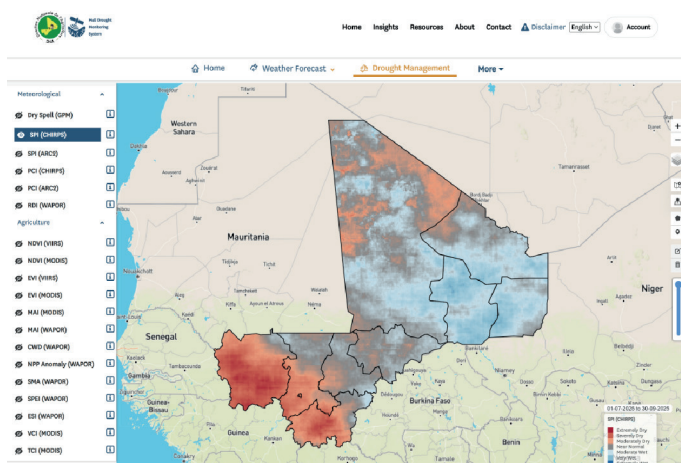


Figure 1: The Mali Drought Monitoring System (MaliDMS) dashboard.

Key technical features

MaliDMS uses Level 1 WaPOR data at 300 m spatial resolution generated every 10 days – including actual evapotranspiration and interception (AETI) and reference evapotranspiration (RET), precipitation (P) and net primary production (NPP) – to provide insights into drought severity and extent at national, regional and local levels. Registered users can access and download results in various formats. The tool is developed in English and French.

Current use and main users

The tool's beta version is under stakeholder review. Once validated, it will be hosted by the Planning and Statistics Unit of the Rural Development Sector (CPS/SDR) and operated by DNA.

Key stakeholders and beneficiaries

Key stakeholders include DNA, the Meteorological Department of Mali (MALI-METEO), CPS/SDR, the Food Safety Commission – Early Warning System (SAP), the National Hydraulic Directorate (DNH) and the Food and Agriculture Organization of the United Nations (FAO).

The tool directly benefits the technical directorates at Ministry of Agriculture (MoA), Ministry of Water and Ministry of the Environment. Farmers also benefit indirectly, as decision-makers use the tool to develop strategies to manage drought impacts.

The co-creation process

During a co-creation workshop with DNA and its partners, a common vision and co-development road map were established. Objectives included outlining current efforts and challenges in agricultural drought monitoring, mapping stakeholder roles, defining tool functionalities, and identifying capacity building needs.

Key outcomes and impacts

The tool enables near real-time monitoring of drought conditions in Mali, offering insights into their impact on agriculture. These outputs offer DNA the opportunity to enhance their 10-day national agricultural bulletins, enabling stakeholders to make informed decisions for timely mitigation and response. Ultimately, the tool helps build drought resilience and reduce negative livelihood impacts.

Sustainability and continuous updating

MaliDMS was co-developed with a team of technical experts from MoA. On-the-job training in operation and maintenance of the tool ensures long-term sustainability. The platform is automatically updated by fetching data from the WaPOR portal and Google Earth Engine.

Scaling potential

MaliDMS is based on the International Water Management Institute's (IWMI's) Early Warning, Early Action and Early Finance (AWARE) framework, which was previously scaled in Zambia and South Asia. The tool can easily be tailored to local needs in other regions. MaliDMS has a high potential for adoption as it was developed upon DNA's request and tailored to local priorities.

The WaPOR portal

The publicly accessible Water Productivity through Open access of Remotely sensed derived data (WaPOR) portal of the Food and Agriculture Organization of the United Nations (FAO) supports agricultural water productivity monitoring at continental, national and basin scales. With new information produced every 10 days, the portal helps users make informed policy and investment decisions.

Authors

Dr. Moctar Dembélé, Researcher – Spatial Hydrologist, International Water Management Institute (IWMI), Accra, Ghana

(moctar.dembele@cgiar.org)

Mr. Amadou Koné, Statistics and Monitoring & Evaluation Officer, National Directorate of Agriculture (*Direction Nationale de l'Agriculture*, DNA), Bamako, Mali (amadoukone76@gmail.com)

Dr. Giriraj Amarnath, Research Group Leader - Water Data for Climate Resilience / Principal Researcher – Disaster Risk Management and Climate Resilience, IWMI, Colombo, Sri Lanka (a.giriraj@cgiar.org)

Dr. Sander Zwart, Senior Researcher - Water and Climate Change Management & Deputy Country Representative - Ghana, IWMI, Accra, Ghana (s.zwart@cgiar.org)

Dr. Petra Schmitter, Research Group Leader – Climate Mitigation & Adaptation Pathways, IWMI, Colombo, Sri Lanka (p.schmitter@cgiar.org)

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International Water Management Institute (IWMI)

Headquarters

127 Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka

Mailing address:

P. O. Box 2075, Colombo, Sri Lanka

Tel: +94 11 2880000

Fax: +94 11 2786854

Email: iwmi@cgiar.org

www.iwmi.org